



# WINTER WEATHER AWARENESS



## A Campaign by the National Weather Service and Tennessee Emergency Management Agency

**Tennessee November 16-20, 2009**

Winter is approaching. Hazardous weather can strike with little notice. Tornadoes strike with unwanted regularity. As winter approached seven years ago, Tennesseans experienced the secondary severe weather maximum at its worst with the

Veterans Day Tornado outbreak. Severe thunderstorms with downburst winds and large hail occur even more frequently. Flooding and flash flooding can also occur with more frequency in the winter months.

The National Weather Service and State Emergency Management Agencies would like to bring another weather threat to the forefront and heighten everyone's awareness of this significant weather threat – Winter Weather.

Last winter was somewhat mild with a few small snow events and several significant snow events across the southern Appalachians.

The winters the past few years have been relatively mild across the region and lulled everyone into a feeling that those were what a "Normal" winter is like. The Christmas Eve 1998 ice storm caused over 17 million dollars of damage and widespread transportation problems. The winter of 95-96 saw many areas of the Southeastern U.S. experiencing a number of very heavy snow and ice storms. Heavy snow or ice can trap people in their homes or automobiles. People are inconvenienced,

injured or even killed.

Even without snow or ice, intense cold can injure or kill before a person is aware they are at risk. Fatalities from hypothermia have occurred in air temperatures of 40-50 degrees. Persons with certain chronic health conditions and those over 65 are more at risk for hypothermia, **even within the home.**

One hazard we do not often associate with winter is flooding. Floods occur when too much rain or melted snow fill river or creek basins too quickly. Along Tennessee's rivers and streams, flooding is a natural part of life and most common during winter and early spring. Frozen ground, sparse vegetation, and less evaporation are all factors that allow water to run off the land and reach the rivers quickly during the cold months.

North Carolina and Virginia will highlight their Winter Awareness during the week of November 30– December 5th.

The National Weather Service in Morristown and the Tennessee State Emergency management Agency will highlight November 16th-20th to bring these hazards to the attention of the public. We will be sending information through our communications network including the National Weather Service's NOAA Weather Radio during this period. We hope you will all join in this effort to make this the safest winter possible.

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## From the Meteorologist in Charge—George Mathews

Wet Spring, Wet Summer—are We Doomed this Winter? Finally the evil drought (the "D" word) has come and gone and we're back to a wet cycle (at least for a little while). This year has been the wettest year so far in many years for much of the area. I've heard many people say that maybe it will be a hard Winter this year—that all this precipitation will be snow once the cold temperatures move into the area—and we're due anyway, huh. So does a wet first part of the year translate to a busy Winter?

Well, I looked at the Climate Prediction Center's (CPC) forecast for this Winter, and with El Nino conditions expected to continue, they are predicting that the main track of storms will be along the Gulf Coast—that we may turn drier. I thought it seemed like a pretty bold climate forecast to say that our precipitation-laden pattern might "suddenly" come to a screeching halt. I thought about it a little deeper—remembering the rule of thumb that the jet stream and storm track move north for the Summer and south for the Winter. If

you think about our pipeline of storms being shifted to the south for the Winter, then we might-well be a little north of the main precipitation paths.

When El Nino was really getting the headlines back in the late 90s I was out in West Texas and I remember hearing that El Nino events are wet in the South and I had remembered that "fact" when I moved here. But when you're talking about El Nino "The South" really needs to be split into the Gulf Coast area and another area farther north—maybe the Mid-South (okay that's a Memphis term), but I think you know what I mean. Typical El Nino Winters have seen wet and stormy Gulf Coast and Florida whereas our more mid-south latitudes have gotten fewer storm systems moving across.

Taking this a step further, I looked at some monthly climate data. Let's ignore El Nino—let's just look at years that have been at least this wet in the first 9-10 months and see if that wet scenario continued right through the Winter. The results were surprising—you can definitely say that the statistics don't support that it will stay wet, rather the data show that a wet first part of a year is followed by a Winter that is characterized by normal to below normal

# Know the Threat!!

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## Snow and Freezing Rain

Heavy snow and/or freezing rain can immobilize a region and paralyze a city. Accumulations of snow can collapse buildings and knock down trees and power lines. Rural areas may be isolated for days. It is recommended that each household have provisions and the ability to remain self-sufficient for at least 3 days without power, or help, as it may take this long to reopen main roads and reestablish vital services.

## Hypothermia

### *Warning Signs*

Uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion.

### *Detection*

Take the person's temperature. If below 95 degrees F, immediately seek medical care. This is a life threatening situation. If care is not immediately available, begin warming the person slowly. Warm the core first. Get the person into warm clothing and wrap them in a warm blanket covering the head and neck. Do not give the person alcohol, drugs, coffee, or any very hot beverage or food, warm broth is better. Do not warm the extremities first, this drives cold blood toward the heart and may cause heart failure.

## Wind Chill

Wind Chill is based on the rate of heat loss from exposed skin caused by the combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill. The biggest question that always comes up with wind chill is, does it affect water pipes and car radiators. The answer is no, the accelerated loss of heat occurs on exposed skin only.

## Frostbite

Frostbite is damage to body tissue caused by the tissue being frozen. Frostbite causes the loss of feeling and a white or pale appearance in extremities, such as fingers, toes, earlobes, or the tip of the nose. If symptoms are detected, get medical help IMMEDIATELY. If you must wait for help, slowly re-warm affected areas. If the person is also showing signs of hypothermia, warm the body core before the extremities.

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## Flooding

Winter is approaching and in addition to being cold and possibly snowy, it's also the flood season. Leaves are beginning to fall off the trees, and the ground will either freeze or potentially become substantially wet. Leaves trap rain and regulate the rate at which it hits the ground and sinks in. Less leaves = more rain hitting the ground faster. Wet or frozen soils can hold much less water than dry ones, and so more water hitting the ground means more runoff, instead of percolating down into the water table. More runoff = more flooding.

The summer and fall of 2009 has been relatively wet. The overall rainfall for the year 2009 to date has been above normal over most of the area. Hence, soils are becoming saturated and there is little room for water storage in the reservoirs and water table than normally. The outlook for autumn and early winter flooding is for a near normal potential, with the latter part of the winter becoming slightly drier than normal.

Rules of safety in rain events are:

- Keep an eye on bodies of water at all times
- Pay attention to the weather where you are AND upstream from you
- NEVER drive through water running over the road
- Even after the rain, flooding may have secretly undermined roads beds

If you come to a closed or flooded road, TURN AROUND! DON'T DROWN! Don't make law enforcement officials have to go looking for you next of kin.



# Before the Storm—Know the Terms

A **Winter Weather Advisory** is issued when ice or snow is expected to hinder travel, but conditions are not serious enough to require warnings.

Freezing rain is forecast when expected rain is likely to freeze as soon as it strikes the ground, potentially creating a coat of ice on roads and walkways. Sleet consists of small particles of ice mixed with rain. Sleet causes roads to freeze and become slippery.

A **Winter Storm Watch** means that severe winter weather is possible within the next

day or two.

A **Winter Storm Warning** means that severe winter weather conditions are expected within the next 24 hours. A blizzard warning means that heavy snow and winds of 35 mph or more are expected.

Be Prepared – Keep a battery powered radio and flashlights in working order, stock extra batteries.



# Before the Storm—Preparations

Be Prepared – Keep a battery powered radio and flashlights in working order, stock extra batteries.

Store drinking water and have food that can be prepared without an electric or gas stove. Stock emergency water and cooking supplies. Have candles and matches available in case of a power outage. Be careful how you use them.

Be certain that needed medications are available.

Be Prepared for isolation at home – Make sure you have sufficient heating fuel; regular fuel sources may be cut off. Have some kind of emergency heating equipment and

fuel so that you can keep at least one room warm, but do NOT use a gas fired grill inside the home. Take measures to protect plumbing from freezing. Contact local utilities for winter tips.

Keep your car or truck “winterized” - Winterizing includes being certain about antifreeze protection levels and use a gasoline additive to reduce gasoline freezing. Carry a “Winter Car Kit” that includes high energy foods, a windshield scraper, flashlight, tow rope or chain, shovel, tire chains, blanket, bag of sand or salt, fluorescent distress flag and an emergency flare – all in case you’re trapped in your vehicle by a winter storm. Keep extra gloves, mittens, hats, earmuffs and outerwear in the vehicle throughout the winter.





## **During the Storm**

**Stay Informed –** Listen to radio or television for updates on weather conditions. With early warning, you may avoid being caught in the storm, or at least be better prepared to cope with it.

**Dress for the season :** Avoid getting wet – Many layers of thin clothing are warmer than a single layer of thick clothing. Mittens are warmer than gloves. Wear a hat; most body heat is lost through the top of the head. Cover your mouth to protect lungs; don't directly inhale extremely cold air.

**Overexertion can bring on a heart attack –** a major cause of death during and after winter storms – If shoveling snow isn't critical, don't do it. If you must shovel, don't overexert yourself.

**If you are isolated at home –** Conserve fuel by keeping your house cooler than usual and by "closing off" heat to some rooms. When kerosene heaters are used, maintain ventilation to avoid toxic fumes. Use only the fuel recommended by the

manufacturer and follow operating instructions. Use a carbon-monoxide detector/ alarm and a smoke alarm.

**Do Not Drive into Worsening Conditions –** If you must travel, take winter driving seriously. Travel by daylight, and keep others informed of your schedule. Drive with extreme caution. Never try to save time by driving fast or by using back-road shortcuts.

**If a Blizzard traps you in your vehicle –** Pull off the highway, stay calm and remain in your vehicle where rescuers are most likely to find you. Set your directional lights to "flashing" and hang a cloth or distress flag from the radio antenna or window.

**Do not set out on foot unless you can see a building close by where you know you can take shelter.** Be careful: distances are distorted by blowing snow. A building may seem close, but actually may be too far away to walk to in deep snow.

## **Trapped in a Vehicle**

If you run the engine to keep warm, open a window slightly for ventilation. This will help protect you from possible carbon monoxide poisoning. Periodically clear away snow from the exhaust pipe.

Exercise to maintain body heat, but avoid overexertion. In extreme cold, use road maps, seat covers, and floor mats for insulation. Huddle with passengers and use your coats as blankets.

Never let everyone in the car sleep at one time. One person should always be awake to look out for rescue crews.

Be careful not to use up all battery power. Balance electrical energy needs – the use of lights, heat and radio with supply. At

night, turn on the inside dome light, so work crews can spot you.



If in a remote area:

Spread a large cloth or the vehicle floor mats on the snow to attract rescue personnel who may be surveying the area from above. Once the blizzard passes, you may need to leave the car and proceed on foot to better shelter.

**Keeping in Touch** After any disaster, friends, relatives, insurance adjusters, etc. may need to locate you and your family. The following tips may reduce the confusion associated with making contact:

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## **Evacuations**

(1) Before evacuating your home, establish a contact person (and phone number) out of the potential disaster area where friends and relatives should “check-in” with each other.

(2) When you evacuate, consider leaving a note, securely attached to the front door, telling where you can be reached – but only if you have reason to believe someone might come looking for you.

(3) If widespread damage occurs, insurance adjusters or others might have trouble identifying your home or finding you. After the danger is over, therefore, consider spray painting the following information somewhere that is highly visible: Name, address, insurance company, policy number and contact number

	December	January	February	Season
<b><u>Bristol</u></b>				
Normal High Temp	47.8	44.1	48.9	46.9
Normal Low Temps	26.8	24.3	27.0	26.0
Normal Temperatures	37.3	34.2	38.0	36.5
Normal Precipitation	3.39	3.52	3.40	10.31
Normal Snowfall	2.2	5.5	4.1	11.8
<b><u>Knoxville</u></b>				
Normal High Temperature	49.8	46.3	51.7	49.3
Normal Low Temperature	31.9	28.9	31.8	30.9
Normal Temperature	40.9	37.6	41.8	40.1
Normal Precipitation	4.49	4.57	4.01	13.07
Normal Snowfall	0.7	3.7	3.0	7.4
<b><u>Chattanooga</u></b>				
Normal High Temperature	52.0	48.8	54.1	51.6
Normal Low Temperature	32.7	29.9	32.6	31.7
Normal Temperature	42.4	39.4	43.4	41.7
Normal Precipitation	4.81	5.40	4.85	15.06
Normal Snowfall	0.1	2.0	1.3	3.4
<b><u>Nashville</u></b>				
Normal High Temperature	50.4	46.5	52.1	49.7
Normal Low Temperature	31.8	28.2	31.4	30.5
Normal Temperature	41.1	37.4	41.8	40.1
Normal Precipitation	4.54	3.97	3.65	12.16
Normal Snowfall	0.5	3.6	3.1	8.2
<b><u>Memphis</u></b>				
Normal High Temperature	52.2	48.7	54.6	51.8
Normal Low Temperature	35.2	31.9	35.6	34.2
Normal Temperature	43.7	40.3	45.2	43.1
Normal Precipitation	5.68	4.24	4.31	4.74
Normal Snowfall	0.2	2.2	1.1	3.5

## **Records**

### **All Time Cold Temperatures**

Chattanooga	-10	Feb 13, 1899, 1/31/1966	1/21/1985
Knoxville	-24	Jan 21, 1985	
Tri-Cities	-21	Jan 21, 1985	
Nashville	-17	Jan. 21, 1985	
Memphis	-13	Dec 24, 1963	

### **Coldest Average Winter**

Chattanooga	34.8	1962-63
Knoxville	34.2	1963-64
Tri-Cities	30.0	1976-77, 1977-78
Nashville	31.8	1977-78
Memphis	37.5	1977-78

### **Coldest Monthly Average**

	Dec		Jan		Feb	
Chattanooga	34.3	1917	28.5	1977	33.8	1895
Knoxville	29.2	1876	26.7	1940	30.5	1895
Tri-Cities	27.8	1963	22.1	1977	28.1	1958
Nashville	29.5	1989	24.5	1977	29.2	1978
Memphis	31.4	1964	26.7	1940	34.0	1958

### **Snowfall**

	Dec		Jan		Feb		Mar		Seasonal	
Chattanooga	14.8	1886	15.8	1893	17.3	1895	20.0	1993	23.9	1894-95
Knoxville	25.4	1886	15.1	1962	25.7	1895	20.2	1960	56.7	1959-60
Tri-Cities	12.9	1963	22.1	1966	20.4	1979	27.9	1960	51.0	1959-60
Nashville	13.2	1963	18.8	1948	18.9	1979	21.5	1892	38.5	1959-60
Memphis	14.3	1963	15.4	1948	10.3	1905	18.5	1882	25.1	1917-18

### **24 Hour Snowfall**

Chattanooga	12.0	1886	10.2	1988	9.9	1912	20.0	1993
Knoxville	8.9	1969	12.0	1962	17.5	1960	14.1	1993
Tri-Cities	9.6	1969	13.0	1996	11.5	1996	14.2	1993
Nashville	10.2	1963	8.5	1905	15.0	1929	17.0	1892
Memphis	14.3	1963	11.8	1948	9.6	1886	18.0	1882



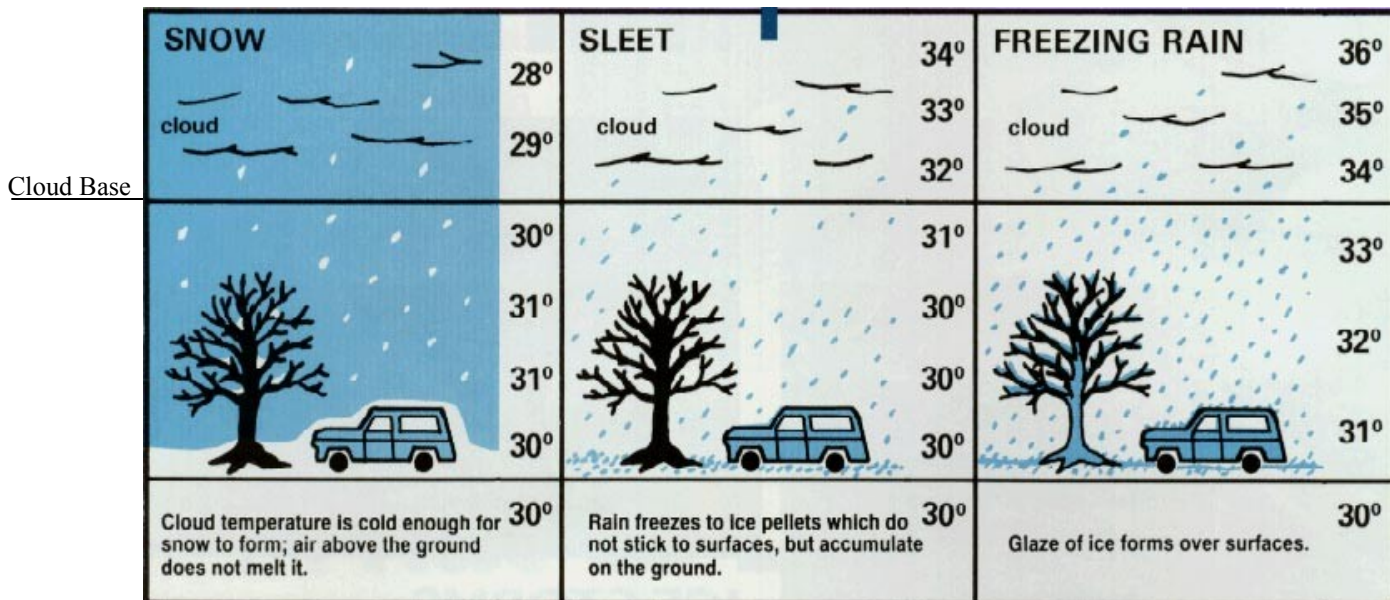
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precipitation.

I've never done much long-term forecasting like this, but from just a sensibility standpoint the indicators seem to be pointing for drier weather for this Winter—especially for our northern areas.

NOW THE DISCLAIMER—if we get a big snow, I know one (or maybe 20) of you will come up to me and say (with a slap on my back), “I thought you said it wasn’t going to snow this Winter!” Well—no, I didn’t say that—and I’m not saying that here. How I feel like Seasonal Forecasting should be interpreted is that we will have less chances for the heart of a storm system to plow right over us, more of them will track south of us. But we could still get a doozy of a storm that hammers us—it only takes one! So, yes, the preparedness officer in me still says we need make preparations, and be ready for the big one. Here’s hoping that we’ll get enough precipitation this Winter that we don’t start trending toward that “D” word again, maybe we get a couple of snows to make the school kids happy, but not so much snow that have to dig our way out of our house!

I hope all of you have a safe and happy holiday season!



## Snow

**Flurries:** Light snow falling for short durations. No accumulation or light dusting is all that is expected.

**Showers:** Snow falling at varying intensities for brief periods of time.

Some accumulation is possible.

**Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes region.

**Blowing Snow:** Wind driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the

ground that is picked up by the wind.

**Blizzard:** Winds over 35 mph with snow and blowing snow reducing visibility to near zero.

## Sleet

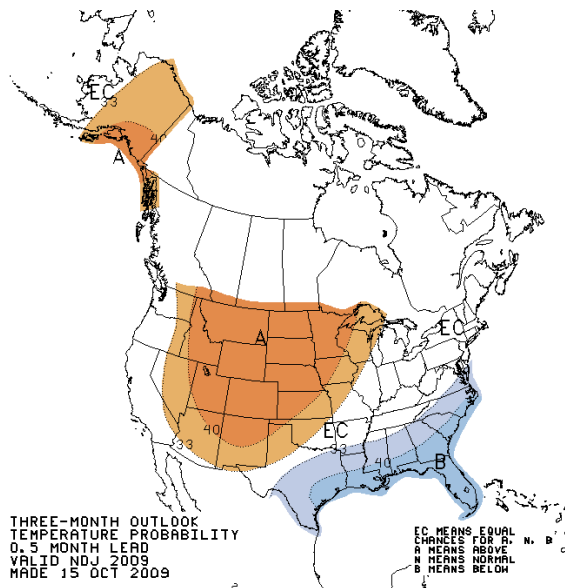
Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorist.

## Freezing Rain

Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to

surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Even small accumulations of ice can cause a significant hazard.

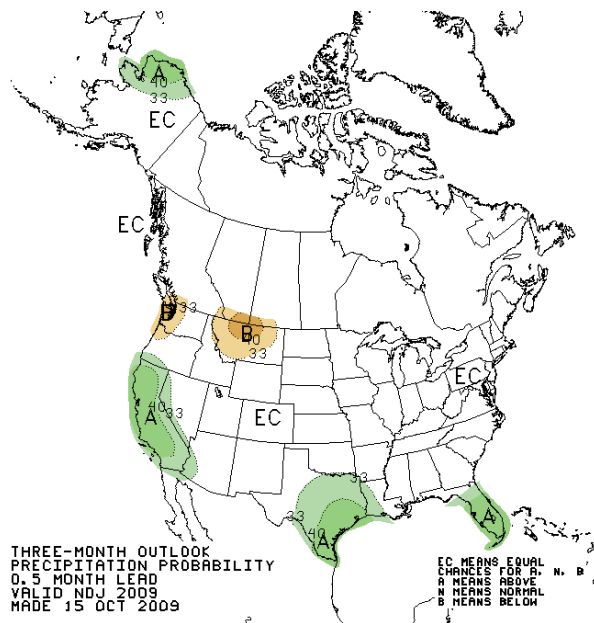
## Winter Outlook



The outlook for this winter is for at or “Equal Chances” on temperatures and precipitation. Equal chances does not mean that rainfall will be “normal” (another difficult term), but that there are no clear pointers to exactly what the precipitation will be, and that there are equal chances of being above normal, normal, or below normal.

Now that we have adequately muddled the waters with equal chances, let’s get back to what “normal” means. In weather terms, we calculate a “normal” every 10 years, based on a 30 year average. When we say the winter will have above normal temperatures, it is based on the entire winter, comparing it to that 30 year average.

When discussing averages, keep in mind that you can still have great extremes (both hot and cold, wet and dry) within that average. One winter that we like to keep in mind is the ‘92-’93 winter, specifically March of ‘93 when a major blizzard struck the region, paralyzing the area for nearly a week. That winter was forecast to be an equal chances winter, and overall was very “normal”, but with and extreme deviation from what we would normally expect.

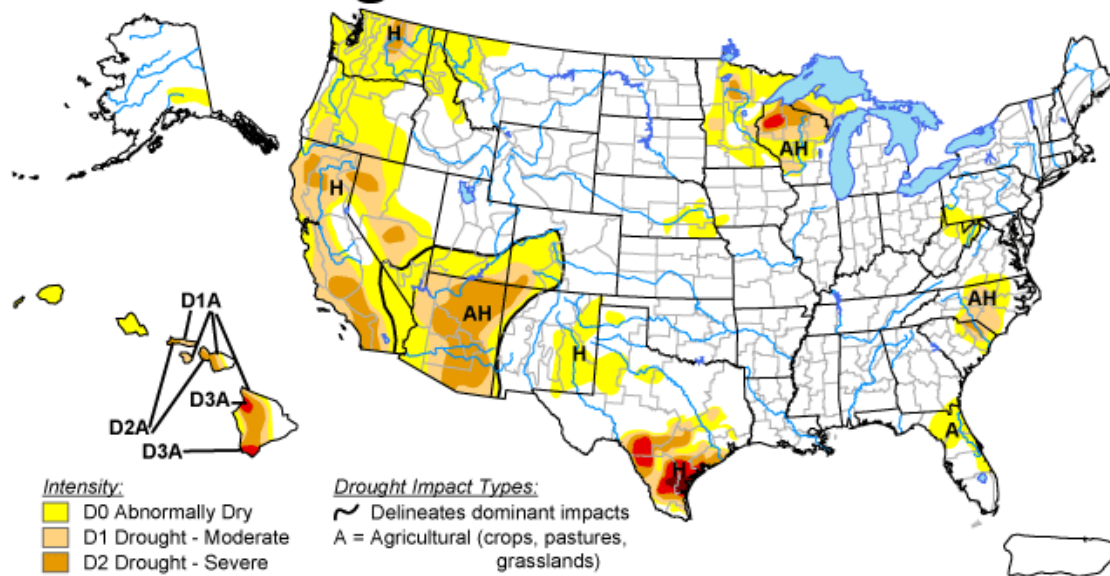


For more information contact the National Weather Service at (423) 586-3771 or e-mail [Tim.Troutman@noaa.gov](mailto:Tim.Troutman@noaa.gov) , regular mail 5974 Commerce Blvd; Morristown, TN 37814.

# U.S. Drought Monitor

October 20, 2009

Valid 8 a.m. EDT



## Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

## Drought Impact Types:

- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, October 22, 2009

Author: Matthew Rosencrans, NOAA/NWS/NCEP/CPC

## Drought

East Tennessee, Southwest Virginia and Southwest North Carolina continue to remain out of any drought conditions at this time due to above normal precipitation that has occurred in 2009. As we move into the winter we may see lessening amounts of precipitation, but the overall forecast indicates that precipitation may be nearly normal throughout the winter.